A RECLASSIFICATION OF SOME RISSOACEA FROM THE WESTERN PACIFIC

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Before attempting to reclassify the material under consideration, it is well to state the following. From personal knowledge it can be said that Laseron's admirable work on rissoids (1950, 1956), was greatly hampered by: (1) inadequate and sometimes imperfect material; (2) difficulty of access to museum collections, library and records; (3) a quite insufficient light source for such delicate work and inadequate magnification with a low powered dissecting microscope, resulting at times in misinterpretation of protoconchs and scultpure.

Notwithstanding these adverse circumstances, his pioneering work will for many years to come, form the basis upon which future knowledge of this difficult group will be built. Other workers, especially anatomists, cytologists and other students of the living animals will undoubtedly reach and publish different conclusions and more refined definitions. At the present time a reclassification of the group on shell characters seems necessary, based upon a clearer insight through the greatly extended collections now at hand.

The main division of the superfamily Rissoacea into Rissoidae and Rissoinidae seems no longer tenable. Instead the superfamily Rissoacea is here divided into a number of families which in the future probably will increase in number, as a result of the need for more precise and more logical classification. Whereas other superfamilies and families are reasonably well defined, there is as yet no agreement as to what groups must be included under the Rissoacea, as the relationship between this and other groups, especially brackish and freshwater forms, is not at all clear. Anatomical study together with a better insight into ecology, and geographic distribution must eventually lead to better understanding. In this regard important studies are now being undertaken by Mr. Winston Ponder of New Zealand, to whom I am indebted for many helpful suggestions and unpublished data.

Attempts at reclassification based on insufficient knowledge of local genera (e.g. that of Coan, 1963) add little to our knowledge but instead contribute to the all too prevalent confusion. Many genera are now grouped together in numerous families e.g. Rissoidae H. A. Adams, 1854; Rissolinidae Gould, 1861; Rissoinidae Stoliczka, 1868; Orbitestellidae Iredale, 1917; Barleeidae Thiele, 1929; Dialidae Iredale and McMichael, 1962; Obtortionidae Iredale and McMichael, 1962; Phosinellidae Coan, 1964; Eatoniellidae Ponder, 1965; Amphithalamidae Ponder, 1965. The general tendency at present seems to be to extend the number of families in this very complex and diverse superfamily, with a consequent curtailment of the number of genera within each family, a method which seems to be supported by the latest anatomical evidence. In the meantime, study at the specific level continues and one may hope that in the not too distant future, a much clearer picture may emerge.

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FAMILY RISSOLINIDAE GOULD, 1861

Genera: *Rissolina* s.s. Gould, 1861; *Costalynia* Laseron, 1956; *Fractoralla* Laseron, 1956; *Schwartziella* Nevill, 1881; and *Pandalosia* Laseron, 1956.

Remarks: *Costalynia* was separated by Laseron from *Rissolina* Gould (Laseron, 1956, p. 395) solely on the basis of the supposed absence of spirally incised lines, a distinction which would hardly justify generic differentiation even if true. Reasonable magnification of well preserved material however shows that all Australian species attributed to *Costalynia,* including the type species have spirally incised lines, though these may be only faintly visible on the lower part of the body whorl. *Costalynia* is therefore a synonym of *Rissolina* Gould.

The tendency of many rissoaceans to discard their protoconchs and often the early teleoconch whorls also, together with the formation of a protoconch-like plug has not always been fully recognised in this group. Laseron considered it as a feature for specific or even generic differentiation. This throwing off, or reabsorption of the protoconch often occurs in those shells where the texture of the protoconch and that of the adult shell is very different. Further evidence of the later formation of the plug is shown by the different texture of the shelly matter of the plug which is of a calcareous nature and does not contain conchiolin as does the protoconch. Protoconchs in Rissoacea, and in most other grastropods for that matter are almost entirely formed by conchiolin in the first instance which is later strengthened and thickened by calcareous inclusions. The visceral hump, being unable to produce conchiolin can only repair the protoconch scar with calcium carbonate. The calcareous composition of the plug is always quite evident and can be clearly distinguished from the true protoconch. This disposal of the protoconch may be explained in the following way; when the animal's visceral hump no longer occupies the entire length of the spire there will be a tendency to reabsorb, or throw off, or shelve off, that portion which is of no further use. Throwing off or reabsorption of protoconchs and earlier whorls is evident in many Rissoacea and related families such as the Truncatellidae. Very extensive reabsorbtion of shelly matter is found for example in the Ellobiidae (see Crosse and Fischer, 1882, and Moreton, 1955) in which the whole of the upper part of the columella and the internal parts of the upper whorls are reabsorbed. Terebrids, thiarids, vermetids and cerithiids use other measures and may form septa closing off the earlier part of the shell, without discarding it.

Disposal of the protoconch occurs frequently in the Rissolinidae and should never be taken as an argument for either specific or generic differentiation. For this and other reasons outlined above, *Costalynia* is considered a synonym of *Rissolina* while on the specific level, *Costalynia* (= *Rissolina*) *decapitata* Laseron, and *C. truncata* Laseron must be considered conspecific.

Apertural developments similar to those found in *Schwartziella* (see below) are prevalent in *Rissolina*. The heavier armament of the aperture and the development of the "pseudocanal" as Laseron calls it, is wholly due to the greater maturity of the shell. Even in the New South Wales species *R. angasi,* and more obviously in *R. crassa* where the apertural characteristics are less well developed than in related Queensland species, one finds fully mature specimens showing this pseudocanal clearly. To distinguish *Fractoralla* from *Rissolina* on these nebulous grounds seems inadvisable and thus *Fractoralla* is here considered a full synonym of *Rissolina*.

The two principal features used by Laseron to distinguish *Pandalosia* from *Schwartziella* were the protoconch and the apertural varix, all other features being similar (the relative sizes of the body whorl and the penultimate whorl are always proportional to overall dimensions). In *Schwartziella* the number of protoconch whorls was given as 1½ but both *S. inconspicua* (Brazier) and *S. lata* Laseron have a protoconch of 2½ whorls as have *Pandalosia excelsis* Laseron and *P. darwinensis* Laseron. Only *Pandalosia obtusa* Laseron has a protoconch of 1½ whorls. Clearly, the number of whorls in the protoconch is inadmissible as a character to separate the two genera. Many genera of Rissoacea show marked differences between what can be regarded as newly mature shells and old mature shells (the latter of course less often encountered). These have been used by Laseron as a point of difference between *Schwartziella* and *Pandalosia*. Close study of many specimens of all related species reveals that *Schwartziella* develops in advanced mature age apertural characters identical with those assigned to *Pandalosia*. Even Laseron's figures illustrate this point (compare fig. 2 and fig. 3 of Laseron, 1956). As there is no correlation between apertural features and the number of protoconch whorls it must be concluded that *Pandalosia* is a synonym of *Schwartziella* with the species *obtusa* Laseron a synonym of *inconspicua* (Brazier). The species *delicatula* Laseron is neither a *Pandalosia* nor a *Schwartziella* but belongs in *Austrosina* (= *Rissoina*).

FAMILY RISSOINIDAE STOLICZKA, 1868.

Genera: *Rissoina* d'Orbigny, 1840; *Peripetella* Laseron, 1956; *Moerchiella* Nevill, 1855; *Zymalata* Laseron, 1956; *Zebinella* Mőrch, 1876; *Condylicia* Laseron, 1956; *Austrosina* Laseron, 1956; *Apataxia* Laseron, 1956; *Pleneconea* Laseron, 1956.

Remarks: If, within a family, so many species occur that the group becomes unmanageable (as in *Marginella* for example) genera are created to facilitate easier determination. In my opinion these genera should only be made of groups of species which are clearly distinguishable from other such groups within the family by at least more than one clearly defined and recognisable feature. Subdividing a genus as Laseron did with *Rissoina* s. lat. into *Peripetella, Moerchiella* etc., is fraught with danger and makes naming shells of this group extremely confusing. *Rissoina inca* d'Orbigny, 1846, the type species of *Rissoina,* has pronounced axial ribs on nearly all the later whorls. In Australian species belonging to this genus, there is a tendency for this sculptural character to vary from a few, bold axial ribs to a large number of fine ribs which tend to be less well developed on the earlier whorls but more so on the later whorls. In some cases (as in *Moerchiella*) the axial ribs are more or less visible only on the earlier whorls and disappear on the later whorls. The drawing of lines of demarkation between genera in such cases is purely subjective and is here considered inadvisable.

If the group of Australian shells called *Zymalata* by Laseron is to be recognised as a separate genus (the generic description hardly justifies this) it can not be called *Zymalata* as there is a perfectly good genus erected for similar species in *Zebinella* Mőrch, 1875. *Condylicia* is also a synonym of *Zebinella*. The supposed difference between them i.e., "finely incised striae" instead of "raised threads" is a question of interpretation and degree. Until more of the animal is known and better specimens are compared, fine differences in texture of this nature must be considered not of sufficient importance to serve as a basis for generic differentiation. The aperture of *Condylicia* also shows no difference from that of *Zebinella* as Laseron's figures clearly illustrate.

Moerchiella could be defended on the basis of its size, "twice as big as *Peripetella*" (which statement is however, an over simplification), and the thin shell and diminishing sculpture. All other features are found in all other members of *Rissoina* s.l. How difficult it is to assign most species either to *Peripetella* or *Moerchiella* is shown by the confusion of Laseron himself and subsequent writers who, rather arbitrarily included species in first one genus, then another. *Rissoina fasciata* A. Adams (Laseron, 1950, p. 261) has little in common with *Moerchiella*, the genus in which Iredale and McMichael (1962) classified it, but answers completely the description of *Rissoina* s. str., while *usitata* Laseron does not fit in the generic description of *Moerchiella* at all and may be a new genus located somewhere near *Caporista* Iredale. Close study seems to indicate the following logical arrangement although further anatomical study may prove otherwise: *Peripetella* to be used only for *queenslandica* Laseron and *linearis* Laseron; *immersa* Laseron = *queenslandica* Laseron. *Zymalata* Laseron = *Zebinella* Mőrch. *Moerchiella* Nevill only to be applied to large, thin Rissoid shells from the western Pacific. The New South Wales species *Moerchiella fasciata* (A. Adams) and *Peripetella variegata* (Angas) are to be left in *Rissoina* s. str.

Austrosina Laseron, 1956, agrees completely with *Rissoina s.s.* as here interpreted, its very apparent relationship with the New South Wales species *fasciata* and *variegata* illustrating this point. The only differences between these shells and the Queensland species described as *Austrosina* are the slightly stronger axial ribs, which as stated before are not a suitable basis for objective separation of genera; in all other features they are typical of *Rissoina*. Discussing and describing *Austrosina* within the context of the Rissolinidae as Laseron did is not only inexplicable, but confusing and has lead to faulty conclusions. When studied closely, the generic description of *Austrosina* differs in no way from that of *Rissoina*, except in the protoconch which is described as "conical, smooth, 3 whorls." However a number of Rissoinas have a 3 whorled, smooth, conical protoconch and it is only the comparision with the type species *inca* d'Orbigny coupled with complete disregard of other known species of *Rissoina* s.s., that led him to this false conclusion. At the specific level, only mature specimens of *Rissoina* develop the fine spiral threads on the lower half of the body whorl. More extensive material now available shows that both *quinita* Laseron and *evanida* Laseron are conspecific with *pulchella* Brazier; *evanida* Laseron was described from a single aberrant broader specimen, well within the variation of the species.

Apataxia Laseron, 1956, seems to be a valid genus, coming very close to *Rissoina s.s.* but with very regular, sharp sculpture, the spiral incisions overriding the axial ribs and more clearly defined than in *Rissoina* s.s.

Pleneconea Laseron, 1956, has large, heavy shells which show close affinity with *Rissoina*, but the angulated body whorl with the resulting triangular aperture sets it sufficiently apart to justify generic separation. The reflected thick aperture and strong varix, representing advanced maturity, were emphasised by Laseron when describing the genus. However as discussed above, these features are found in other rissoinid genera.

FAMILY PHOSINELLIDAE COAN, 1964

Genera: *Phosinella* s. str. Mőrch, 1876; *Phintorene* Iredale, 1955; *Planapexia* Laseron, 1956; *Merelina* Iredale, 1915; *Isseliella* Weinkauff, 1884.

Remarks: In his justification of Iredale's genus *Phintorene*, Laseron states (1956, p. 405) "there is no fundamental difference between *Phosinella* and *Phintorene* except the size, the former being 8 mm. or more, the latter 6 mm. or less." That this hardly justifies generic separation is obvious, making *Phintorene* a synonym of *Phosinella*, there being no other characters to distinguish them. As explained above many Rissoacea are subject to disposal of the protoconch and early whorls, replacing them by a protoconch-like plug, and considerable changes may occur in apertural characters in advanced mature age. Both features are very pronounced in some species of *Phosinella* and thus, there is no valid justification for the retention of *Planapexia* which was differentiated on these misinterpreted features. *Planapexia* Laseron therefore is clearly a synonym of *Phosinella* Mőrch.

Species allocated to *Isseliella* Weinkauff have certain features which serve for generic separation and they form a rather well defined group. Their predominantly rounded whorls, much finer sculpture, of rounded, ill-defined, rather than sharp clathrations, and the absence of a tuberculate fold on the body whorl, possessing instead a smooth basal fold, distinguish them from *Phosinella* Mőrch.

The sculpture of *Merelina,* its general shell outline, and its apertural features, which resemble those of immature *Phosinella,* indicate a close relationship with *Phosinella.* However there are sufficient differences to warrant its retention as a full genus. Groups closely related to *Merelina* which could be treated provisionally as subgenera are *Pyramidelloides* Nevill, 1855 (*P. viticula* Laseron is however a *Costabieta*); *Costabieta* Laseron, 1956; *Herewardia* Iredale, 1955. I have found the sculpture on the lower part of the body whorl not only of the greatest importance in recognising specific differences but also in assessing the relationship between genera. The number, texture and character of the basal folds are the only non-variable characters found in species of *Merelina,* all others e.g. size, shape, texture, sculpture, being variable to a greater or lesser extent.

SUMMARY

PROPOSED CHANGES IN THE NOMENCLATURE OF SOME WESTERN PACIFIC RISSOACEA

Family Rissolinidae Gould, 1861.

- Genus *Risssolina* Gould, 1861 (*Rissoina plicatula* Gould, 1861, subs. des. Nevill, 1885).
  - Syn. *Costalynia* Laseron, 1956 (*Rissoina cardinalis* Brazier, 1877, orig. des.).
  - Syn. *Fractoralla* Laseron, 1956 (*F. praecida* Laseron, 1956, orig. des.).
- Genus *Schwartziella* Nevill, 1881 (*Rissoina orientalis* Nevill, 1881, orig. des.).
  - Syn. *Pandalosia* Laseron, 1956 (*P. excelsis* Laseron, 1956, orig. des.).

Family Rissoinidae Stoliczka, 1868, nom. trans. Cossman, 1919 (ex Rissoininae).

- Genus *Rissoina* s. str. d'Orbigny, 1840 (*R. inca* d'Orbigny, 1840, monotypy).
  - Syn. *Austrosina* Laseron, 1956 (*A. pulchella* Brazier, 1877, orig. des.).
- Genus *Moerchiella* Nevill, 1884 (*Rissoa gigantea* Deshayes, 1863, orig. des.).
- Genus *Zebinella* Mőrch, 1876 (*Helix* = *Rissoina decussata* Montagu, 1803, sub. des. Nevill, 1885).
  - Syn. *Zymalata* Laseron, 1956 (*Z. concinna* Laseron, 1956, orig. des.).
- Genus *Apataxia* Laseron, 1956 (*A. erecta* Laseron, 1956, orig. des.).
- Genus *Peripetella* Laseron, 1956 (*P. queenslandica* Laseron, 1956, orig. des.).
- Genus *Pleneconea* Laseron, 1956 (*P. angulata* Laseron, 1956, orig. des.).

Family Phosinellidae Coan, 1964

Genus *Phosinella* s. str. Morch, 1876. (*Rissoa pulchra* C. B. Adams, 1850, subs. des. Nevill, 1884).
    Syn. *Phintorene* Iredale, 1955 (*Rissoina allanae* Laseron, 1950, orig. des.).
    Syn. *Planapexia* Laseron, 1956 (*P. fractura* Laseron, 1956, orig. des.).

Genus *Isseliella* Weinkauff, 1881 (*Rissoina* (*I.*) *mirabilis* Weinkauff, 1881, orig. des.).

Genus *Merelina* Iredale, 1915 (*Rissoina cheilostoma* T. Woods, 1877, orig. des.).

Subgenus *Pyramidelloides* Nevill, 1884 (*Rissoina miranda* A. Adams, 1861.

Subgenus *Herewardia* Iredale, 1955, (*Rissoa kesteveni* Hedley, 1907, orig. des.).

Subgenus *Costabieta* Laseron, 1956 (*C. paucina* Laseron, 1956, orig. des.).

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